

Virtual Labs on DIKSHA

Central Institute of Educational Technology
NCERT, New Delhi



Recommendation of NEP 2020

National Education Policy (2020) recommends-

- Creating virtual laboratories so that all students have equal access to quality practical and hands-on experiment-based learning experiences.
- Though, there is no substitute to hands-on experience of physical laboratory, virtual labs have the great potential to enhance actual laboratory experience.
- These lab based e-resources can help students in visualizing the concepts in a better manner.

Idea behind setting up of Virtual labs

- The virtual labs are based on the idea that lab experiments can be taught using internet more efficiently in a cost-effective manner.
- They will also benefit the students who do not have access to physical labs or schools where equipments are not available.
- Experiments can be accessed anytime and anywhere.
- Virtual labs overcome the constraints of time as physical labs are available only during school hours.

What will you experience?

Following resources are available on Virtual Labs on DIKSHA to enhance your learning experience:

- **Theory and Procedure** provide information of the concept related to the experiment.
- **Animation and Video** help in visualizing theoretical concepts.
- **Simulation** provides real time experience of performing experiments.
- **Viva voce** is for self evaluation, you can assess how much you have grasped the concept.
- **Feedback** is meant for improving the resources from user's perspective.

Pedagogical integration of Virtual labs

Virtual labs can help **learners in following ways:**

- perform experiments multiple times without consuming chemicals
- revise theoretical concepts
- obtain result of time consuming experiments
- analysis of results improving logical thinking skill

Pedagogical integration of Virtual labs

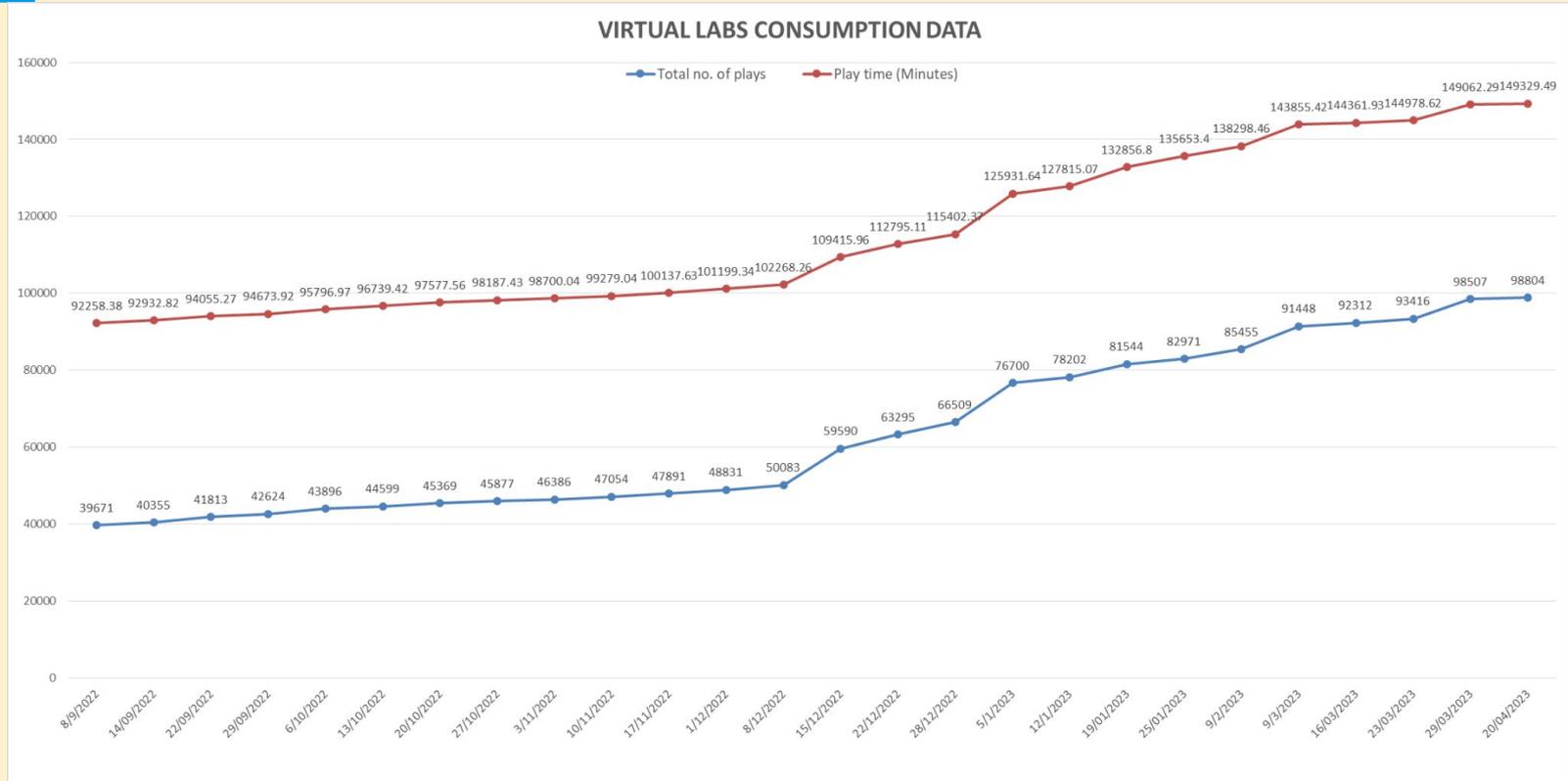
Virtual labs can help teachers in following ways:

- Design lesson plan integrating Virtual labs
- Use Virtual labs to demonstrate experimentation skills and help learners in developing such skills

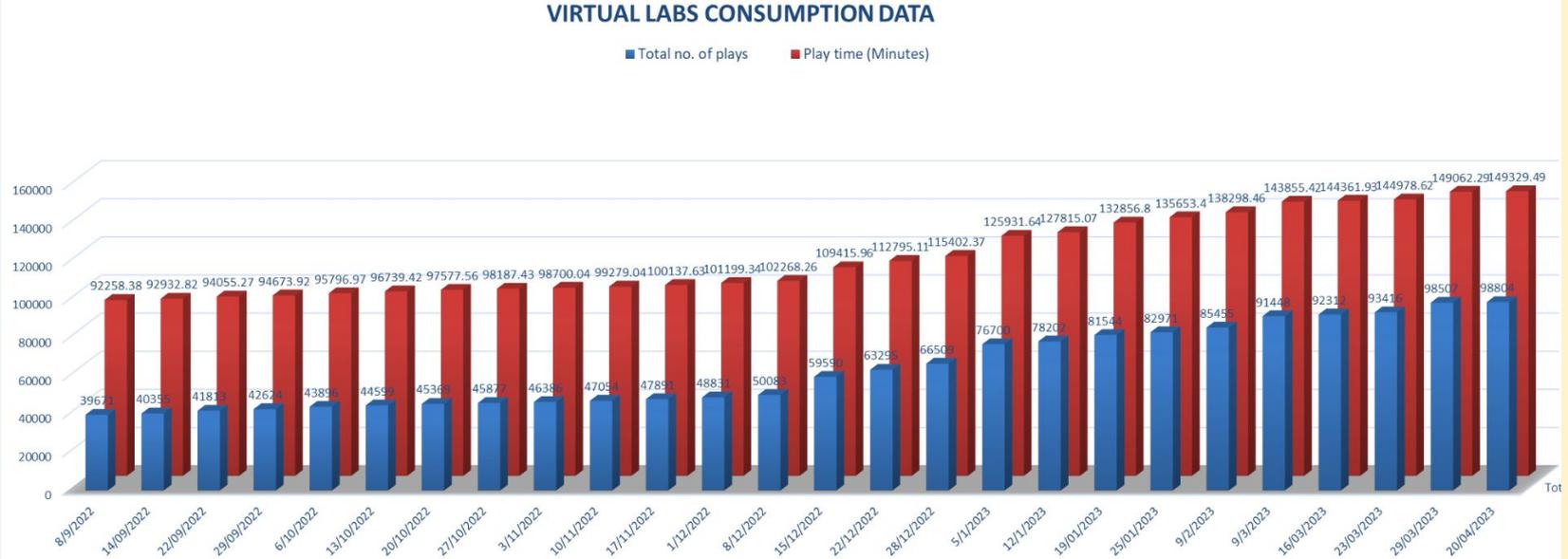
EXPERIMENTATION SKILLS		
Observation	Prediction	Controlling variables
Interpretation	Communication	Forming conclusions

Virtual Labs was launched on 29th July, 2022

Following data shows that large no. of users are taking benefit of available resources



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Steps to reach at your desirable resource

URL: <https://diksha.gov.in/>

- Search <https://diksha.gov.in/>

The screenshot shows the Diksha website interface. At the top left are logos for the Government of India, Diksha, and eGyana. A navigation bar includes icons for Home, Dashboard, About, Get App, and Contribute. A language selector shows 'English'. The main header reads 'DIKSHA DIGITAL INFRASTRUCTURE FOR KNOWLEDGE SHARING' and describes it as an initiative of the National Council of Educational Research and Training (Ministry of Education, Govt of India). A red button says 'EXPLORE DIKSHA'. Below it, text says 'Explore DIKSHA's world of open digital content'. At the bottom left is the NCERT logo and another 'Explore' button.

DIKSHA
DIGITAL INFRASTRUCTURE FOR
KNOWLEDGE SHARING

An initiative of the National Council of Educational
Research and Training (Ministry of Education, Govt of
India)

EXPLORE DIKSHA

Explore DIKSHA's world of open digital content

NCERT

Mann ki Baat
A comic book covering
9 distinguished personalities

मन्न की बात 100
MANN KI BAAT 100

IT WILL TAKE A LIFETIME TO CLEAR THE HIMALAYAS.

WHEN WE WORK TOGETHER, I SEE THE LIGHT AT THE END OF THE TUNNEL.

I'LL TAKE ANOTHER BAG, PRADEEP!

THAT'S THE GREAT I HAVE MORE AND I'LL TAKE ANOTHER BAG.

FOR A BRIGHTER FUTURE, WE MUST INVEST IN OUR YOUNGEST GENERATION. WE MUST INVEST IN OUR CHILDREN.

MY FAVORITE COLOR IS THE HINDI COLOR, RED.

EXPLORE

- Scroll banners to find Virtual labs vertical and click on its “Explore” icon.

The screenshot shows the top section of the DIKSHA website. On the left, there are logos for the Government of India, DIKSHA, and eGya. Below these is a language selector set to 'English'. The main header features navigation icons for Home, Dashboard, About, Get App, and Contribute. The 'Home' icon is highlighted with a red underline. Below the navigation is a large banner for 'Virtual Labs' with a blue and yellow background, featuring various scientific icons like a microscope, test tubes, and chemical structures. A red 'EXPLORE DIKSHA' button is positioned below the banner. At the bottom left, there is an NCFERT logo and an 'Explore' button.

English

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[EXPLORE DIKSHA](#)

Explore DIKSHA's world of open digital content

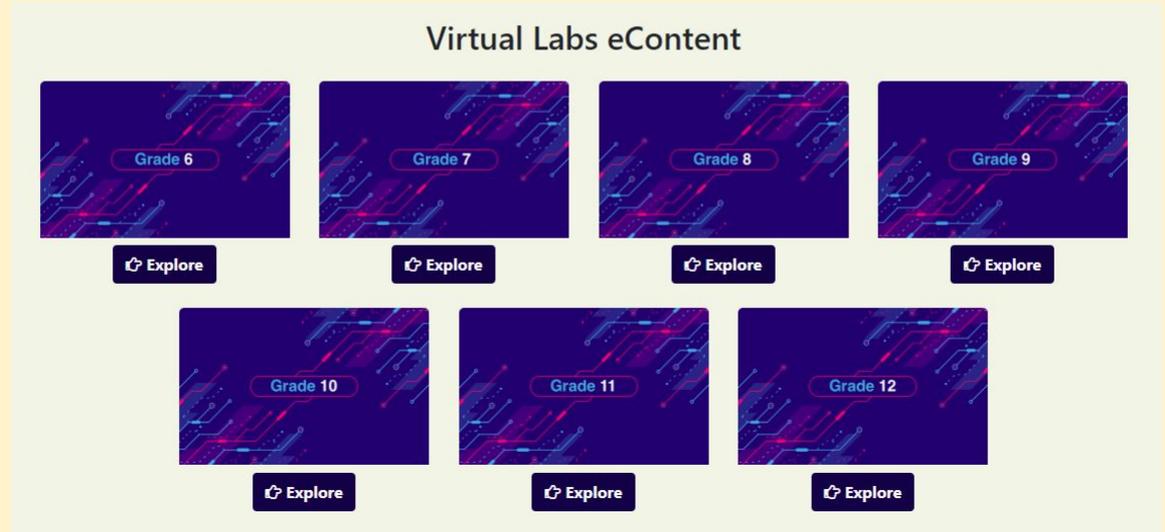
 **NCFERT** [Explore](#)

Home Dashboard About Get App Contribute

Virtual Labs

[Explore](#)

-
- Scroll down on the landing page of Virtual labs to reach eContent of classes 6-12.



- Click on the “Explore” icon of the desirable class, select the medium of interaction, then choose a subject you wish to study.

Virtual Labs eContent



🔍 Explore

🇮🇳 हिन्दी Medium
🇬🇧 English Medium

- Mathematics
- Science



🔍 Explore

🇮🇳 हिन्दी Medium
🇬🇧 English Medium

- Mathematics
- Science
- English



🔍 Explore

🇮🇳 हिन्दी Medium
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🔍 Explore

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🇬🇧 English Medium

- Mathematics
- Science



🔍 Explore

🇮🇳 हिन्दी Medium
🇬🇧 English Medium

- Mathematics
- Physics
- Chemistry
- Biology
- Computer Science



🔍 Explore

🇮🇳 हिन्दी Medium
🇬🇧 English Medium

- Mathematics
- Physics
- Chemistry
- Biology

- Click on the Explanation resource to reach the link for related resources

The screenshot displays a digital interface for a Science Lab Manual. At the top, a yellow header bar contains a back arrow, the text "Science Lab Manual", and "English • Class 10". Below this is a white navigation bar with a hamburger menu icon, a search icon, and zoom controls (-, +, 1 / 1, <, >). The main content area features a blue and white graphic with the text "Lab Experiment: Importance of Light in Photosynthesis" and "Please click on the link mentioned below to access related resources." Below this text is a blue underlined link: "[Importance of Light in Photosynthesis](#)". The bottom left of the main area shows "Page 1 of 1 • 100%". The bottom of the interface has a "Photosynthesis" label, a "Share" icon, and a "Fullscreen" icon.

On the right side, a sidebar lists various topics with expandable arrows:

- 20. Saponification reaction for preparation of soap
- 21. Compare the foaming capacity of different samples of soap
- 22. Compare cleansing action of soap in soft and hard water
- 23. Structure of stomata
- 24. Photosynthesis
- 25. Importance of carbon dioxide in photosynthesis
- 26. Liberation of carbon dioxide gas during aerobic respiration

Under item 24, "Photosynthesis", there are three resource cards:

- Experiment PDF (with a sub-card "Experiment_24")
- Explanation Resources (highlighted with a red box, containing a sub-card "Photosynthesis")
- Importance of Light in Photosynthesis (two sub-cards)

- Variety of resources will help you in your learning journey.

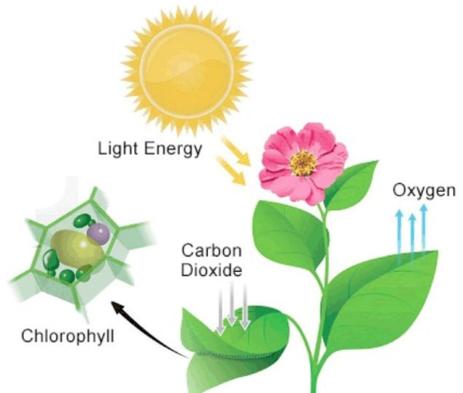
Theoretical Framework

Objective

Our objective is to show experimentally that light is necessary for photosynthesis.

The Theory

Photosynthesis



The diagram illustrates the process of photosynthesis. At the top, a sun icon is labeled "Light Energy". Yellow arrows point from the sun to a pink flower and a green leaf. Below the flower, a green leaf is shown with a magnified view of a leaf cell. Inside the cell, a green chloroplast is labeled "Chlorophyll". White arrows labeled "Carbon Dioxide" point into the leaf. Blue arrows labeled "Oxygen" point out of the leaf.

- Variety of resources will help you in your learning journey.

The screenshot shows a web-based simulation interface. At the top, there is a navigation bar with icons and labels for 'Theory', 'Procedure', 'Animation', 'Simulator', 'Video', 'Viva Voce', 'Resources', and 'Feedback'. The main content area features a simulation window titled 'Importance of Light in Photosynthesis' with a 'SAVE' button in the top right corner. On the left side of the simulation window, there are three dropdown menus: 'Select the power source:' with '40 W' selected, 'Select the distance of the power source:' with '50 cm' selected, and 'Select the colour of the filter:' with 'Clear' selected. Below these menus are three buttons: 'Start', 'Stop', and 'Reset'. The simulation itself depicts a laboratory setup on a dark surface. A green chalkboard in the background has a clock showing approximately 1:50. A lamp is positioned to the right, casting a beam of light onto a glass inverted cylinder containing a test tube with a green plant. A ruler at the bottom indicates a scale from 0 to 100 cm.

Enjoy self paced
engaging learning experience
on Virtual Labs on DIKSHA!